

**Food Preferences of Common Grackles, Red-Winged Blackbirds,  
and Yellow-Headed Blackbirds Presented with Cracked Corn,  
Sunflower Meats, and Brown Rice**

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Blackbirds migrating through North Dakota in late summer damage sunflower crops shortly after the yellow ray petals begin to wither and fall (Besser 1985). DeHaven (1982) reported bird damage losses of \$7.4 million on 2.2 million acres in 1980. Various behavioral, chemical, and mechanical strategies have been employed over the past decade to reduce the damage. Although some of these methods have effectively dispersed or reduced blackbird populations, many have proven to be ineffective over time, economically infeasible, or culturally unacceptable (Guarino 1984).

Recent research in Louisiana using the avian toxicant, DRC-1339, has determined that the chemical effectively reduced spring blackbird populations that damage rice paddies (Glahn and Wilson 1992). Brown rice was used as bait for those studies under an EPA section 24(c) Local Needs registration. Although effective as a bait in Louisiana, blackbirds migrating through North Dakota in late summer may not select rice as a bait when ripening sunflower is already a plentiful primary food source.

Selectivity of potential bait foods for migrating blackbirds in North Dakota has

not been previously tested. From 5 - 17 September 1992, we examined consumption differences among and between groups of red-winged blackbirds (*Agelaius phoeniceus*), yellow-headed blackbirds (*Xanthocephalus xanthocephalus*), and common grackles (*Quiscalus quiscula*). All birds had previously been exposed to brown rice, cracked corn, and sunflower in individual food consumption trials. We tested the null hypothesis that mean consumption of 3 food types does not differ between redwings, yellow-heads, and common grackles. In addition, we hypothesized that no mean consumption difference of each food type exists between yellow-head and redwing males and females.

#### **Methods**

Groups of yellow-head males (n=15), yellow-head females (n=15), redwing males (n=12), redwing females (n=15), and common grackles (n=15) were separately housed in 2.44 x 2.44 m holding cages. In 3 independent 4-day trials, groups were given a simultaneous choice of U.S. Standard Sieve No. 5 cracked corn, < No. 7 brown rice, and No. 6 sunflower meats and were allowed to feed for one hour every morning. After the feeding period,

remaining food and spillage were dried for 24 hours. Dried samples were weighed to the nearest mg to determine net bait consumption for each group of blackbirds.

Since group sizes were unequal, consumption data was analyzed using a GLM Repeated Measures Multivariate Analysis of Variance (SAS Institute, 1990). When significant differences did exist, Tukey's studentized range test was conducted to determine where the differences occurred. Consumption data from redwings and yellow-heads were compared to detect significant differences ( $P \leq 0.05$ ) in mean consumption between sexes and species. Sexes of common grackles were pooled and, therefore, were not included in the analysis. Since common grackle sexes were pooled, yellow-heads, redwings, and common grackles were tested for differences in mean consumption ( $P \leq 0.05$ ) between species only.

### Results

Mean consumptions of sunflower, cracked corn, and brown rice did not differ between redwings and yellow-heads ( $P=0.59$ ,  $P=0.11$ , and  $P=0.05$ , respectively). However, a significant difference ( $P=0.02$ ) in mean consumption of sunflower was detected between sexes for those species. Mean sunflower consumption by males ( $X=3.50$  g) was greater than by females ( $X=2.33$  g). No significant differences in mean consumption of cracked corn ( $P=0.63$ ) and brown rice ( $P=0.26$ ) were detected between the sexes. For all food types we found no significant interaction for mean consumption between species and sexes [SF ( $P=0.65$ ), CC ( $P=0.15$ ), and BR ( $P=0.06$ ) respectively]. See Table 1.

Mean consumption of sunflower and cracked corn by redwings, yellow-heads, and common grackles differed significantly ( $P=0.06$ ,  $P=0.00$ , respectively). The difference for sunflower occurred between common grackles ( $X=4.21$  g) and yellow-heads ( $X=2.77$  g). Cracked corn consumption was significantly different between common grackles ( $X=7.34$  g) and yellow-heads ( $X=4.43$  g) and common grackles ( $X=7.34$  g) and redwings ( $X=3.12$  g). No significant differences in consumption of brown rice were detected between the 3 species ( $P=0.16$ ).

### Discussion

Redwing and yellow-headed blackbirds showed no preference over cracked corn, brown rice, or sunflower. A significant difference in quantity of sunflower eaten by males over females was detected. Since, we were more concerned about differences between sexes in consumption between sunflower meats, cracked corn, and brown rice, significant differences between sexes for a single food type is not critical in deciding which food type would be the most effective bait.

Significant differences in consumption of both sunflower and cracked corn were prevalent. Brown rice was the only food type in which no significant differences in consumption were detected. In fact, brown rice was the only food type that was eaten consistently and, overall, in relatively greater quantities by all three species. Of all food types tested, brown rice clearly seems to be a sound choice for use a bait for avicide research.

Table 1. GLM Repeated Measures Analysis of Variance of redwings and yellowheads.

Sources	Cracked Corn	Sunflower	Brown Rice
Species	0.1134	0.5894	0.0534
Sex	0.6314	0.0159	0.2563
Species*Sex	0.1449	0.6840	0.0601

Table 2. GLM Repeated Measures Analysis of Variance for redwings, yellow-heads, and common grackles.

Source	Cracked Corn	Sunflower	Brown Rice
Species	0.0002	0.0545	0.1578